Emerald Ash Borer Management Plan
Straight Lake State Park and Wildlife Area
October 2014

Background
The Emerald ash borer (EAB, *Agrilus planipennis* Fairmaire) is a beetle that is native to China, Mongolia, the Korean Peninsula, Japan, Taiwan, and the Russian Far East. Emerald ash borer probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. It was first identified in the Detroit, Michigan area in 2002, and, to date, EAB has been confirmed in 24 states and two Canadian provinces.

As of November, 2014, there are 37 counties in Wisconsin quarantined for EAB. Polk County is not a quarantined county. However, EAB has been located in Minneapolis, and St. Paul, MN, both of which are approximately one hour away.

In North America, EAB has only been found in ash (*Fraxinus* spp.) trees and recently in white fringetrees (*Chionanthus virginicus*). Ash trees generally die within five years of being infested. There appears to be very little natural resistance of North American ash species to EAB.

The canopy of infested trees begins to thin above infested portions of the trunk and major branches because the borer larvae destroy the water and nutrient conducting tissues under the bark. Heavily infested trees exhibit canopy die-back usually starting at the top of the tree. One-third to one-half of the branches may die in one year. Most of the canopy will be dead within 2-4 years after symptoms are first observed. Sometimes ash trees generate sprouts from the trunk after the upper portions of the trees die. Although difficult to see, the adult beetles leave a D-shaped exit hole in the bark, roughly 1/8 inch in diameter, when they emerge.

Adult EAB beetles nibble on ash leaves but cause little damage.

The EAB beetle can have a one- or two-year life cycle. Adults begin to emerge early June in southeastern Wisconsin with peak emergence in late June. Females usually begin to lay eggs within bark cracks and crevices about 2 weeks after emergence. Eggs hatch in 1-2 weeks, and the tiny larvae bore through the bark and into the cambium which is the area between the bark and wood where nutrient levels are high. The larvae feed under the bark for several months, usually from late June through October. The larvae typically pass through four stages, eventually reaching a size of roughly 1 to 1.25 inches long. Most EAB larvae overwinter in a small chamber in the outer bark or in the outer inch of wood. Pupation occurs in spring and the new generation of adults will emerge in early June, to begin the cycle again.

EAB adults are capable of flying several miles from the tree where they emerge, although most beetles travel less than ¼ mile. Many infestations, however, were started when people moved infested ash nursery trees, logs, or firewood into non-infested areas.

Key Concerns for Straight Lake State Park and Wildlife Area
Straight Lake State Park and Wildlife Area is one of Wisconsin's newest properties and is currently largely undeveloped. The main concerns regarding EAB and ash tree mortality in Straight Lake State Park and Wildlife Area are public safety, resources protection and aesthetics.

Straight Lake State Park will offer many recreational opportunities including 5 pack-in campsites, canoeing and kayaking, picnicking, bird watching, and many hiking trails. The wildlife area offers many places to hike, hunt, trap, and bird watch. A segment of the Ice Age Trail bisects Straight Lake.

As development proceeds, trees located in heavily-used areas including campgrounds and picnic areas will typically be under greater stress than forest trees due to soil compaction and bark and limb injuries and closer to potential sources of EAB-infested materials. Ash trees in designated uses areas may therefore be more vulnerable to initial EAB infestation. The loss of mature trees impacts shade, screening, site cooling, and the aesthetic quality of the area. A component of ash tree management is the inclusion of new tree plantings to address shading and screening needs and to improve aesthetics.

Current Situation

As of December 2014, EAB is not known to occur at Straight Lake State Park and Wildlife Area. Ash trees are a small component of the forests of Straight Lake. There are pockets of higher concentrations of ash trees; however, these areas are not located in the priority areas of the office, day-use area, trails, and campground. Park staff should be able to remove any potential hazard ash trees as needed in the priority areas.

Priority Areas

1. Designated use areas
    a. Pack-in campsites,
    b. Day use/picnic areas
    c. Boat landings
    d. Office
2. Trail, including Ice Age Trail, corridors

Schedule for Priority Areas

Area 1: Identify, mark, fell, and process ash trees once EAB is discovered within 15 miles of the park or wildlife area

Area 2: Identify and fell ash trees as part of routine hazard tree management along trails.

Low Priority Areas

Low priority areas are those where there is no ash (such as grasslands), no compelling ecological need to remove ash, or no potential public hazards posed by dead or dying ash trees. Ash trees in these areas will be allowed to die and become wildlife habitat. Timber management, incorporating EAB guidelines, will continue in the low priority areas as described in the master plan goals and objectives. Natural regeneration is the preferred alternative unless the local DNR forester recommends replanting, the property manager concurs, and it is an allowable practice in the property master plan.

Wildlife Concerns

Ash species, especially white ash, can be important sources of habitat and browse for wildlife. The samaras are good forage for many other birds and small mammals. White ash's ability to readily form trunk cavities if the top is broken and its large size (24 to 48 inches) at maturity make it highly valuable for primary cavity nesters such as woodpeckers. Once the primary nest excavators have opened up the trunk of the tree, it is excellent habitat for secondary nesters such as wood ducks, owls, nuthatches, and gray squirrels.

Endangered Resources and State Natural Area (SNA) Concerns
There are several rare plant and animal species documented in the park and wildlife area. Any management activities for EAB will take into account these species by following species management guidelines and consultation with the NHC district ecologist as needed.

There are two state natural areas on the properties: Tunnel Channel Woods and Straight Lake Tamarack Fen. The western end of the Tamarack Fen State Natural Area has a higher concentration of ash trees than other areas of the park. Control of invasive species is allowed, per the master plan, if control measures, in consultation with the SNA program, are deemed necessary in the Tamarack Fen State Natural Area.

Archaeological Feature Concerns
Historical and archaeological sites have been identified at Straight Lake State Park and Wildlife Area. Impacts at these sites will be avoided by proper timing of timber harvesting or other management activities.

Tools for Management of EAB
Monitoring
Property staff will receive training in EAB symptom identification and will monitor for EAB symptoms and hazard trees in the park and wildlife area.

Ash Tree Removal
Hazard trees will be identified and removed from within the priority areas as noted above. After EAB has been found within 15 miles of the property, ash trees within priority areas 1 and 2 will be considered infested. Within area 1, infested ash trees that are potentially hazardous will be felled as needed and chipped. Depending on the quantity, chips can be blown into wooded areas. If that is not feasible, collected chips will be retained on the park, away from the public. Wood from infested trees that cannot be chipped will be stockpiled on the park for two years, away from the public. It can then be used as firewood by the park. Stumps in mowed areas will be ground down so that they are not a tripping or maintenance equipment hazard. Standing dead trees that have been dead for a year will not have any additional EAB emerging from them so are "safe" to use. Ash trees along trails (area 2) will be felled as part of routine hazard tree management. Dead standing, non-hazardous ash trees will be left for wildlife in area 2. Timber management, incorporating EAB guidelines, will continue in the low priority areas as described in the master plan goals and objectives.

Cultural Management
Tree planting will be needed to replace hazard trees that are removed from high use areas. Replacement trees will be a diverse mix of native, ecologically appropriate species, with a balance of fast- and slow -growing species. Fast-growing trees will help replace shade trees sooner while allowing slower growing, longer living species to reach maturity. Proper maintenance after the trees have been planted, such as watering, will be needed to increase the survival of the saplings.

Biological Controls
Several non-native parasitic wasp species have been identified and authorized for release by the U.S. Department of Agriculture as biological control agents. These stingless wasp species are highly specific to EAB and although they will not eliminate the population of EAB, they can help extend the life of trees, which gives the park more years to spread out removals of dead/dying trees once EAB arrives. The wasps are small, non-stinging insects that are harmless to humans. Straight Lake would have to be assessed to see if biological controls would be worthwhile.

Pesticides
Insecticides can be used to protect any high value trees (for example, a large shade tree). Depending on the chemical used, pesticide treatments may need to be applied at one or two year intervals.

Public Education and Communication
EAB posters and other information will be posted at park bulletin boards. Flyers and information will be handed out in the park office. Notices about hazard tree removal will be placed on bulletin boards and in the park office.

Funding
Educational literature is available through the DNR at no charge. The park may be able to purchase any materials for physical controls and labor out of the operations budget. Tree planting may also be done by volunteers.

EAB management will be multiple year effort that will likely strain the operations fund of Straight Lake State Park and Wildlife Area. Property staff will identify and pursue alternate funding sources, such as the Sustainable Forestry Fund, to augment the property operation budget.

Plan Updates
This plan will be updated and modified, as needed, as the park and wildlife area is developed and as EAB arrives.

Plan developed by (Date): Matthew Densow 10/20/2014
Plan reviewed by:
Regional Forest Health Specialist (Date): Paul Cigan 12/05/2014
State Parks Ecologist (Date): Craig Anderson 12/12/2014
Parks District Manager (Date): Ben Bergey 1/17/2015

Revised by (Date):_____
Revision comments:

Straight Lake EAB Map

Map Features

- State Park Boundary
- Wildlife Area Boundary
- Priority Area 1
- Priority Area 2 (Ice Age Trail)

Note: Any areas not colored in (white areas) are low priority areas.

Notes

STRAIGHT RIVER WILDLIFE AREA

STRAIGHT LAKE WILDERNESS STATE PARK

285Th Ave

130Th St

103Rd St

1: 27,477

0.9 0 0.43 0.9 Miles

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